

## The family Izinkalidae fam. nov. (Crustacea: Amphipoda: Lysianassoidea) in Australian waters

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### Abstract

The new lysianassoid amphipod family Izinkalidae is established and the genus *Izinkala* is reported from Australian waters for the first time. One new species, *Izinkala griffithsi* sp. nov., is described.

**Key words:** Crustacea, Amphipoda, Lysianassoidea, Izinkalidae, *Izinkala griffithsi*, Australia, taxonomy, new family, new species

### Introduction

Based on collections from the RV *Meiring Naude*, Griffiths (1977) described the remarkable lysianassoid amphipod genus, *Izinkala*, from deep water off Natal on the east coast of South Africa. At the time he mentioned the ‘potential zoogeographical interest’ of these collections. Recently Azman & Lowry (2009) described *Boltsia myersi* from north-eastern Australia, a previously endemic family from eastern South Africa. In this paper we describe *Izinkala griffithsi*, a second family-level taxon previously endemic to the eastern South African area. Myers & Lowry (2009) indicated a biogeographic relationship between these ancient Gondwanan continents. The description of an Australian representative of the Izinkalidae strengthens this link.

### Material and methods

The descriptions were generated from a DELTA database (Dallwitz 2005) to the lysianassoid genera of the world. Material is lodged in the Australian Museum, Sydney (AM). The **bold** parts of the descriptions are diagnostic characters which distinguish each taxon in at least two respects from every other taxon. Standard abbreviations on the plates are: A, antenna; G, gnathopod; MD, mandible; MP, maxilliped; MX, maxilla; P, pereopod; U, uropod.

### Izinkalidae fam. nov.

**Diagnostic description.** Head concealed, slightly longer than deep. *Antennae* calceoli absent. *Antenna 1* with callynophore in male; accessory flagellum article 1 not forming a cap. *Antenna 2* peduncular article 3 without distal hook. *Epistome and upper lip* [unknown]. *Mouthpart bundle* subquadrate. **Mandible** incisors well developed, asymmetrical, left convex, right straight; left lacinia mobilis probably absent; accessory setal row absent; **molar absent**; palp inserted mid-way. *Maxillae 1* and 2 vestigial. **Maxilliped inner and outer plates absent**; palp 4-articulate, slender; article 4 vestigial.

**Gnathopod 1** minutely subchelate; **coxa vestigial**; merus and carpus not rotated; **ischium extremely long** (length more than 6 x breadth); carpus and propodus elongate, rectilinear; propodus with large robust seta on short palm; dactylus truncated. **Gnathopod 2** chelate; coxa large, subequal in size to coxa 3; ischium very long; carpus subrectangular, with palmate setae; propodus subovate, with palmate setae; dactylus minute. **Pereopods** all simple; distal spurs absent. **Pereopod 4** coxa with well developed posteroventral lobe. **Pereopod 5** coxa anterior lobe deeper than posterior lobe. **Pereopod 6** coxa anterior lobe slightly deeper than posterior lobe.

*Uropod 2* inner ramus without constriction. *Uropod 3* biramous. *Telson* entire.

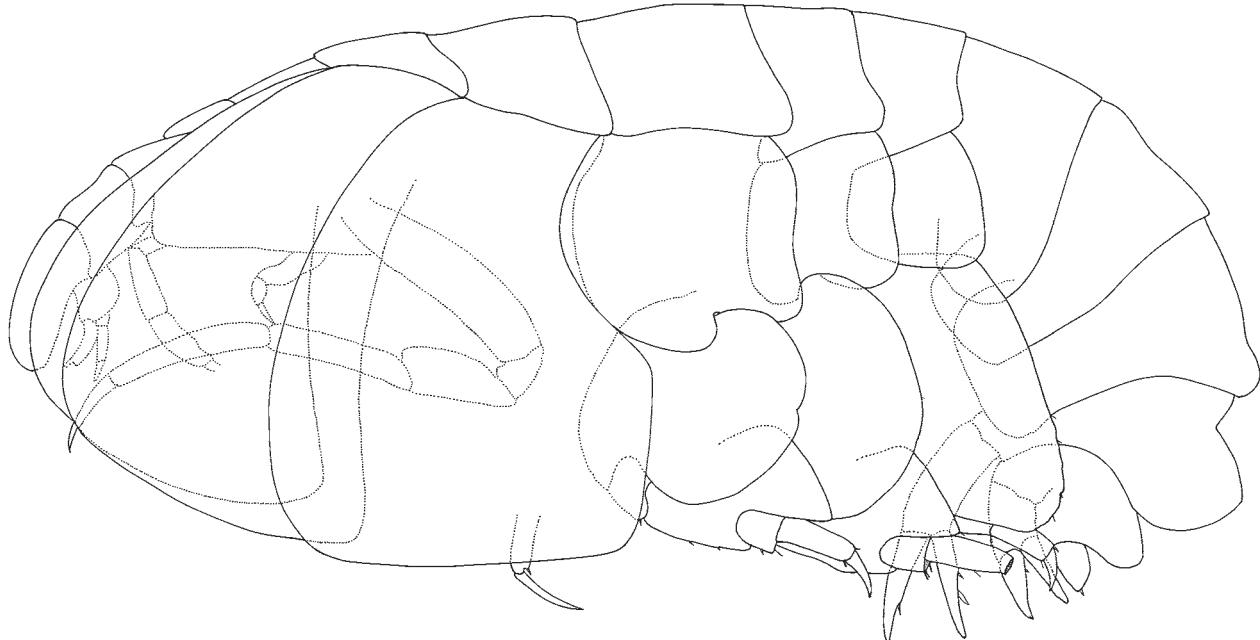
**Type genus.** *Izinkala* Griffiths, 1977.

**Generic composition.** *Izinkalidae* includes one genus: *Izinkala* Griffiths, 1977.

**Remarks.** Griffiths (1977) remarked on the similarities of *Izinkala* to *Clepedecrella* J.L. Barnard, 1962 and *Kerguelenia* Stebbing, 1888. We agree that both groups have reduced mouthparts and similarly shaped first gnathopods. But we have no way of knowing if the mouthpart reductions are homoplasious between the taxa. For example, in kergueleniids the inner and outer plates of the maxillipeds are reduced, but in izinkalids they are completely absent and the well developed fourth articles of the palps of kergueleniids are vestigial in izinkalids. Antenna 1 has a completely different structure across these groups – unmodified in kergueleniids and highly modified in izinkalids. The coxa of gnathopod 1 is vestigial in *Izinkala*, a condition never found in kergueleniids, and although the gnathopods are long and slender in both groups, *Izinkala* has an extremely long ischium and the dactylus is a short, blunt instrument not at all similar to the filiform dactylus of kergueleniids.

Griffiths (1977) also mentions the similarity of *Izinkala* to *Lepidepecreum*, particularly *L. clypodentatum* J.L. Barnard, 1962. We see similarities in overall body shape and in the shape of the seventh pereopods, but the severe reduction in mouthpart morphology and the completely different first gnathopods makes statements about relationships tenuous.

At this stage we find it difficult to align the izinkalids with other lysianassoid family-level taxa.



**FIGURE 1.** *Izinkala griffithsi* sp. nov. Holotype, male, 2.6 mm, AM P.70330.

### *Izinkala* Griffiths, 1977

*Izinkala* Griffiths, 1977: 115. —Ledoyer, 1986: 768. —Barnard & Karaman, 1991: 492.

**Diagnosis.** With the characters of the family.

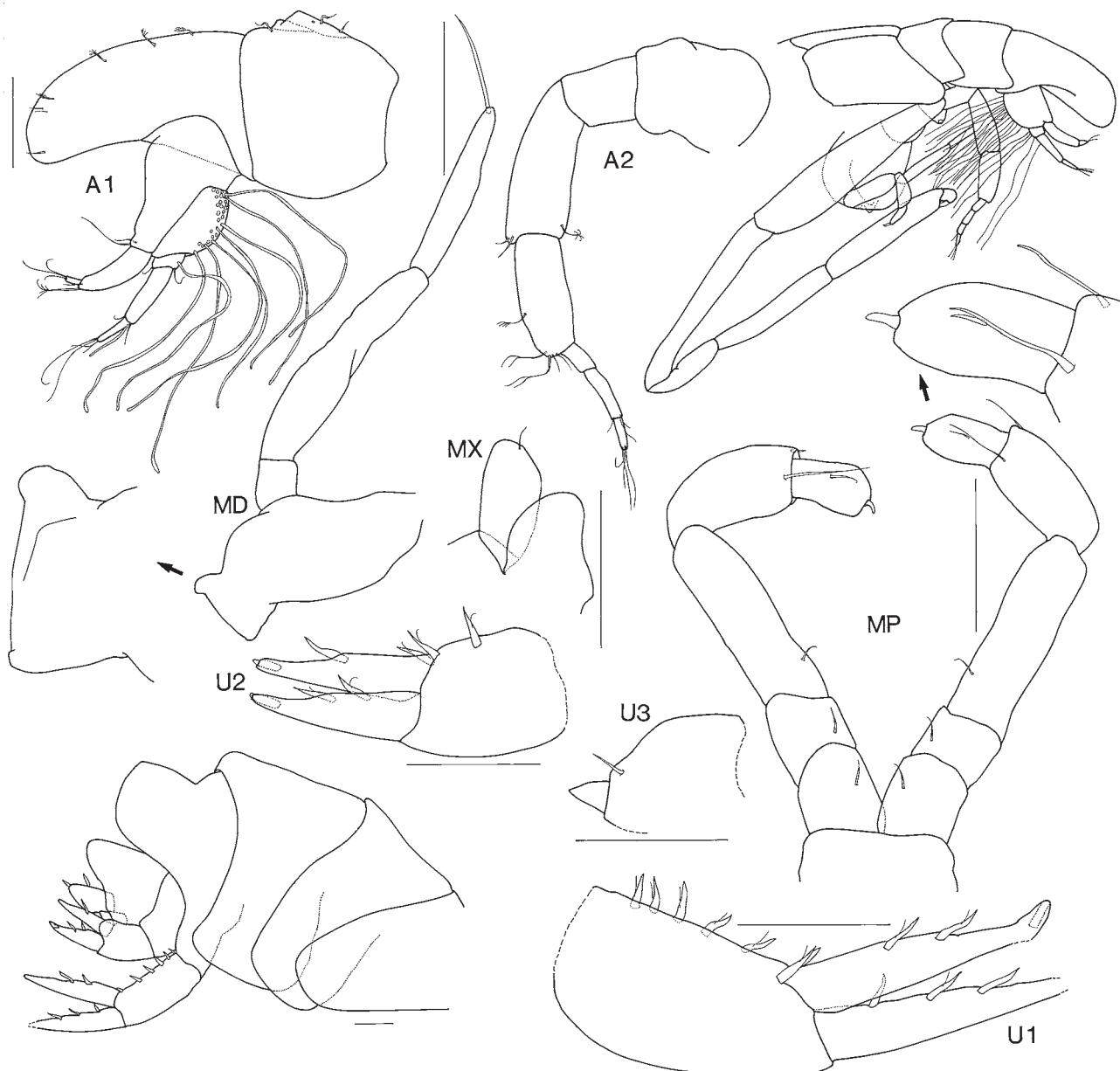
**Included species.** *Izinkala* includes 2 species: *I. fihla* Griffiths, 1977; *I. griffithsi sp. nov.*

***Izinkala griffithsi sp. nov.***

Figs 1–3

**Type material.** HOLOTYPE, male, 2.6 mm, AM P.70330, east of Newcastle, New South Wales, Australia, 32°53'S 152°35'E, 165 m, bottom tow, 15 August 1985, FRV *Kapala* stn K85-12-23.

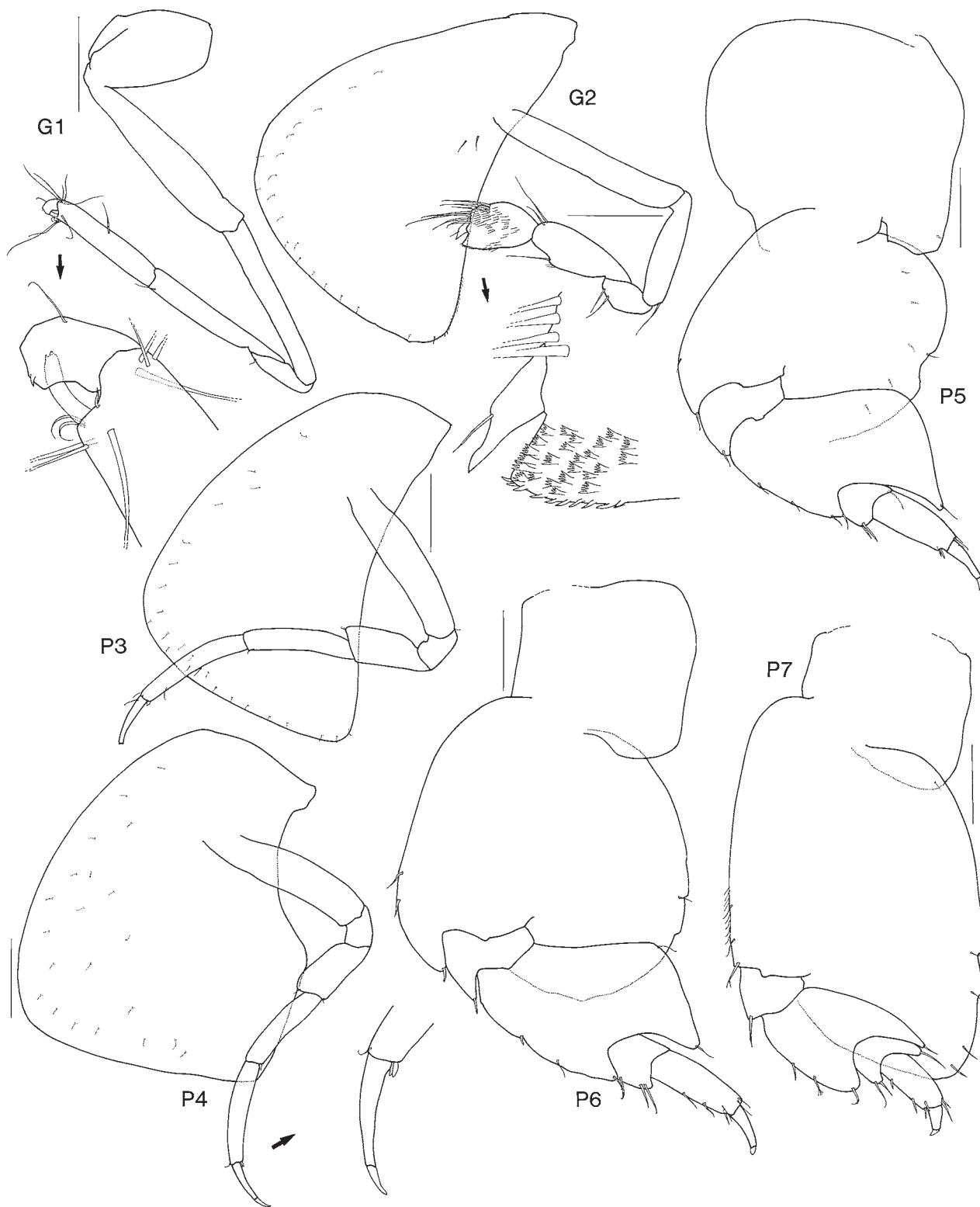
**Type locality.** East of Newcastle, New South Wales, Australia, 32°53'S 152°35'E, 165 m depth.



**FIGURE 2.** *Izinkala griffithsi sp. nov.* Holotype, male, 2.6 mm, AM P.70330. Scale for U3 represents 0.05 mm; remainder represent 0.1 mm.

**Etymology.** Named for Charles Griffiths in recognition of his work on the amphipod fauna of southern Africa. **Diagnostic description.** Head partially covered by coxae 1 and 2; lateral cephalic lobe subacute. **Antenna 1** peduncular article 1 produced ventrodistally, **narrowly rounded**; peduncular article 2 produced dorsodistally into large lobe. **Maxilla 1** vestigial. **Maxilliped** without inner and outer plates; **palp article 1** about 3.5 x as long as broad, article 2 length about 2 x breadth; article 4 vestigial. **Gnathopod 1** coxa

vestigial, ischium about 8 x as long as broad; carpus rectolinear, about 7 x as long as broad; propodus rectolinear, about 5 x as long as broad, palm short with a large robust seta; dactylus short, truncated. *Gnathopod 2* minutely



**FIGURE 3.** *Izinkala griffithsi* sp. nov. Holotype, male, 2.6 mm, AM P.70330. Scales represent 0.2 mm.

chelate; coxa enlarged, as large as coxa 3, with a broadly rounded anterior margin; ischium about 5 x as long as broad; carpus subrectangular; propodus subovate with minute obtuse palm. **Pereopod 5** basis expanded

posteriorly; **merus** broadly expanded posteriorly, with sloping straight posteroproximal margin and straight posterodistal margin, **posteroventral lobe extending halfway along propodus**. *Pereopod 6* basis expanded posteriorly; merus broadly expanded posteriorly, with sloping straight posteroproximal margin and straight posterodistal margin. *Pereopod 7* basis large, posterodistal lobe extending slightly beyond carpus; **merus expanded both anteriorly and posteriorly**, posterodistal lobe extending to end of carpus. *Epimeron 3* posterior margin smooth, posteroventral corner narrowly rounded. *Urosomite 1* with a large rounded dorsal boss. *Urosomite 2* with a smaller subtriangular dorsal boss. [*Uropod 3* not clear.] *Telson* entire, with 4 robust setae.

**Remarks.** Unfortunately the mount of urosomite 3, with both of the third uropods and the telson, is very difficult to interpret. Our figure of uropod 3 shows what could be interpreted as a uniramous uropod with a large peduncle and a tiny single ramus. However, it corresponds well to what we have seen as the 2-articulate outer ramus of a biramous uropod 3 on the holotype of *I. fihla*. Ledoyer (1986) illustrated a 4 mm female with a 1-articulate outer ramus on a biramous uropod 3. Clearly, the true state of *Izinkala* uropod 3 is not yet resolved. It was not possible to illustrate the telson for *I. griffithsi* but the 4 large robust setae are clearly visible.

*Izinkala griffithsi* is very similar to *I. fihla* and if more material becomes known they might possibly be regarded as one species. However, at present the species can be distinguished by: antenna 1 peduncular article 1 ventrodistal lobe narrowly rounded (acute in *I. fihla*); maxillipedal palp article 1 length about 3.5 x breadth (about 2.5 x in *I. fihla*); pereopod 5 merus posteroventral lobe extending halfway along propodus (to end of carpus in *I. fihla*); pereopod 7 merus expanded anteriorly (not expanded in *I. fihla*).

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